

NOTES ON AFZELIA Sm. AND PETALOSTYLIS R.Br.  
(CAESALPINIACEAE)

by

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ABSTRACT

Ross, J. H. Notes on *Afzelia* Sm. and *Petalostylis* R.Br. (Caesalpinaceae). *Muelleria* 6(3): 211-215 (1986). — *Afzelia australis* F. M. Bailey is lectotypified. The genus *Petalostylis* is reviewed, a neotype of *P. spinescens* E. Pritzl is chosen, and notes, distribution maps and a key to the two species recognized are provided.

INTRODUCTION

The following notes arise out of the preparation of accounts of the respective genera for the Flora of Australia.

TYPIFICATION OF AFZELIA AUSTRALIS F. M. BAILEY

F. M. Bailey (1888) based his description of *Afzelia australis* on material collected by Dr T. L. Bancroft at Johnstone River in the Cook district, Queensland. In response to a request for the loan of the type of *A. australis* I received from the Queensland Herbarium a specimen (BRI 8142) which has been accepted in BRI as type material although with some doubt. This doubt is indicated by a typed note initialled by C. T. White accompanying the specimen which reads: "The label of this specimen has been lost but it is probably the remains of Bailey's type of the species". The specimen is sterile and a trifle fragmentary.

In contrast, there is a fertile specimen in MEL (MEL 1530057) accompanied by a letter from Bailey to Mueller dated 26 Nov. 1886. Bailey wrote: "At your request I have sent with this all of the flowers, I had, a pod, and shoot of foliage with a single trijugate leaf, a small piece of the wood, and a piece of the bark of *Afzelia australis*". Bailey's letter contains the same description of *A. australis* as that subsequently published in the protologue so it is clear that he had drawn up the description of what he called "my tree of the Johnstone River" before he sent the material to Mueller. All of the elements described by Bailey in his letter as having been sent to Mueller are represented on MEL 1530057.

As indicated by Bailey in the protologue of *A. australis*, he and Mueller differed over the identity of the Johnstone River plant. Mueller (1882) had recorded the existence of *A. bijuga* (Colebr.) A. Gray in Queensland and his request to Bailey for material of the Johnstone River plant was to enable him to decide whether the material matched other material he had seen referred to *A. bijuga* or whether it did in fact represent a second species. Bailey went to some length in his letter to convince Mueller that *A. australis* was not conspecific with *A. bijuga* and offered to publish *A. australis* "under our joint authority" if Mueller agreed that the Johnstone River plant was specifically distinct. It is clear, however, that Mueller considered *A. australis* to be conspecific with *A. bijuga*, a view accepted by subsequent workers, the only difference being that the Queensland plant is now placed in the genus *Intsia* and is known as *I. bijuga* (Colebr.) O. Kuntze.

In view of the uncertainty surrounding the specimen in BRI and the fact that it is sterile, I now select the sheet in MEL (MEL 1530057) collected by T. L. Bancroft at Johnstone River in 1886 and referred to above as the **lectotype** of *A. australis*. The BRI specimen (BRI 8142) is regarded as a doubtful isolectotype.

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## NOTES ON PETALOSTYLIS R.Br.

*Petalostylis* R.Br., a small endemic genus largely confined to the arid regions of Australia, is distinguished from *Labichea* Gaudich. ex DC., the other member of the subtribe Labicheinae Irwin & Barneby, by the distinctive style which is dilated into a boat-shaped petaloid limb, and by differences in the androecium.

R. Brown (1849) based his description of *Petalostylis* and the type *P. labicheoides* on material collected by Sturt in Central Australia. Mueller (1856), mistakenly believing *Petalostylis* R.Br. to be a later homonym of *Petalostylis* Grisebach, transferred *P. labicheoides* to his new genus *Petalogyne* and described a second species, *Petalogyne cassioides* from material he collected in northern Australia. *Petalogyne cassioides* was reduced to varietal rank under *Petalostylis labicheoides* by Bentham (1864), a situation which prevailed until Symon (1981) accorded var. *cassioides* specific rank. At the same time Symon relegated *Petalostylis millefolium* Pritzl, *Petalostylis labicheoides* var. *microphylla* Ewart & Morrison and *Petalostylis spinescens* Pritzl to synonymy under *Petalostylis cassioides* so that in recent years only two species have been recognized within the genus.

Symon (1981) employed a combination of the length of the leaf-rhachis, leaflet number and leaflet shape to differentiate *P. cassioides* from *P. labicheoides*. Although these characters enable the two species to be distinguished in much of central Australia, when material of the genus is examined throughout its range there is no discontinuity between the two species on the basis of leaf-rhachis length or in leaflet number. *P. labicheoides* tends to have short leaves with few large leaflets whereas *P. cassioides* tends to have longer leaves with more numerous smaller leaflets. Leaflet shape offers a more reliable means of separating the two species and the majority of specimens can be sorted quite readily on this basis (see key). A feature of some of the material referable to *P. cassioides* is the tendency for the leaf-rhachis to become fairly rigid and persist after the leaflets have been shed. No diagnostic differences have been found in the flowers or fruits.

The following key should enable most specimens to be determined:

Leaflets 3-19, lanceolate, elliptic or narrow-obovate-oblong, acuminate apically, 0.8-3 cm long; leaf-rhachis 0.5-6, rarely to 8, cm long (W.A., S.A., Qld., NSW) ..... *P. labicheoides*  
 Leaflets mostly 11-80, usually obovate, obovate-oblong, obcordate or suborbicular, rounded or obtuse apically and emarginate, retuse or shortly mucronate, 0.2-1.8 cm long; leaf-rhachis 1.5-14 cm long (W.A., N.T., S.A., Qld) .... *P. cassioides*

*P. cassioides* and *P. labicheoides* have different distributional ranges which show little overlap except perhaps in Western Australia between Onslow and Carnarvon and in the Burke, Gregory and Mitchell districts of Queensland (see Figs. 1 and 2).

Occasional specimens are very difficult to place with certainty, for example, Shields 2 (BRI 89374) collected from the Mitchell District, 20-40 miles SSW. of Winton on the Opalton road, Queensland. The specimen has some of the attributes of each species: it differs from typical *P. labicheoides* in having more numerous leaflets on some leaves and from typical *P. cassioides* in leaflet shape. The specimen shows an approach to *P. cassioides*, falls within the distributional range of this species, and has been referred to it hesitantly. The notes accompanying the specimen indicate that it was growing along a stock route which raises the possibility that the plant was raised from seed brought in by stock.

There are two specimens from Doomadgee Reserve in north-west Queensland. *J. R. Clarkson* 2682 (BRI, QRS), collected on a levee of the Nicholson River, is unquestionably *P. cassioides*. An undated specimen collected by *F. W. Whitehouse s.n.* (BRI 345975) is difficult to place but is apparently referable to *P. labicheoides*. It occurs within the distributional range of *P. cassioides* and far from the nearest population of *P. labicheoides*. Despite these occasional difficulties, *P. cassioides* and *P. labicheoides* appear to be sufficiently distinctive to warrant specific rank.



Fig. 1.

The distribution of *Petalostylis labicheoides*.

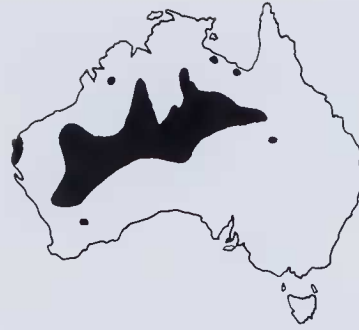


Fig. 2.

The distribution of *Petalostylis cassioides*.

Unlike *P. labicheoides* which is relatively uniform throughout its range, *P. cassioides* is polymorphic on account of the current inclusion within it of material formerly ascribed to *P. millefolium*, *P. labicheoides* var. *microphylla* and *P. spinescens*. During the preparation of a flora account of *Petalostylis* it was necessary to review this earlier decision to accommodate these taxa within *P. cassioides*.

Pritzel (1904) based his description of *P. millefolium* on a specimen collected by Diels near Menzies in Western Australia. In naming *P. millefolium*, Pritzel was recognizing the variant with decumbent stems which are pubescent when young, leaves 4-10 cm long with numerous (40-80), small (3-4 mm long, 2-3 mm wide) obovate or suborbicular sparingly pubescent leaflets, broadly ovate or subcordate stipules, and relatively small flowers. I have not succeeded in tracing *Diels 5168*, the type. There is no specimen in B (presumably destroyed during the second world war), BM, E, HBG, K, L, M or P or in any of the Australian herbaria but Pritzel's comprehensive description leaves no doubt about either the plant that he had before him when describing *P. millefolium* or the application of the name. Neither have I found a specimen that exactly matches Pritzel's description and a search in the type locality during the spring of 1984 by my colleague Mrs M. G. Corrick failed to locate any plants of *Petalostylis*. As I have not seen a specimen that is a reasonable match of Pritzel's description, I have refrained from selecting a neotype of *P. millefolium*. The specimen, *B. H. Smith 450* (MEL) collected along the road from Payne's Find to Wubin, Western Australia, shows an approach to typical *P. millefolium* in having decumbent stems, leaves with numerous pairs of small leaflets and the distinctive stipules but differs in that the stem is branched and is not subglabrous when mature, the flowers are larger and the specimen lacks fruits.

*P. labicheoides* var. *microphylla* was described by Ewart & Morrison (1913) from a specimen collected by G. F. Hill (No. 364) 40 miles W. of Lander's Creek in the Northern Territory and housed in MEL. Var. *microphylla* was characterised by having stout rigid densely pubescent leaf-rhachides which persist after the leaflets have fallen and are occasionally almost spinescent, and up to 41 broadly obovate and retuse or obcordate leaflets 2-4 mm long and less than 3 mm wide which are glabrous above and thinly pubescent below. Ewart and Morrison acknowledged the existence of numerous intermediates between var. *microphylla* and typical *P. cassioides*.

In describing *P. spinescens*, Pritzel (1918) was recognizing essentially the same taxon as that described by Ewart and Morrison under the name *P. labicheoides* var. *microphylla* and presumably was unaware of Ewart and Morrison's work. Pritzel based his description of *P. spinescens* on *Basedow 440* from Central Australia (district C as defined by Tate). *P. spinescens* was described as a glaucous tomentose shrub having spreading leaves 4-6 cm long with somewhat incurved spinescent rhachides and 18-24 ovate or suborbicular leaflets up to 5 mm long and 4 mm

wide which were sparsely tomentose above and densely so below. There is no type specimen in B, BM, E, HBG, K, L, M or P or in any of the Australian herbaria and I have not found a specimen that exactly matches the description. Although the application of the name is not in doubt, in the absence of any type material I now select the specimen *P. K. Latz 883* in MEL collected 5 miles W. of Docker River Settlement in the Northern Territory as the **neotype** of *P. spinescens*. *Latz 883* agrees reasonably well with the description but differs in that some leaves are slightly longer and have more numerous slightly narrower leaflets, none of which is suborbicular, and bears young fruits as well as flowers.

Specimens of typical *P. cassioides*, typical *P. millefolium* and typical *P. spinescens* look very different at first sight. However, when the entire range of morphological variation is inspected the extremes are seen to be linked by numerous and varied intermediates which show various combinations of characters. The characters typifying each extreme appear to vary independently of each other although some combinations of characters are commoner than others. For example, typical *P. millefolium* has decumbent stems and leaves with 40-80 leaflets but decumbent stems are by no means always associated with numerous leaflets. Neither are the spinescent rhachides typical of *P. spinescens* always associated with densely pubescent rhachides and leaflets.

Specimens referable to typical *P. cassioides* are distributed throughout much of the drier areas of Western Australia, the central Northern Territory, north-western South Australia and in parts of western Queensland. Specimens typical of *P. millefolium* and *P. spinescens* occur sporadically in Western Australia and the Northern Territory within the range of distribution of *P. cassioides*.

Unfortunately I have had limited opportunity to study *Petalostylis* in the field or to conduct an in-depth study of the genus. For the Flora of Australia account I have followed Symon in recognizing only two species and in treating *P. millefolium*, *P. labicheoides* var. *microphylla* and *P. spinescens* as synonyms of *P. cassioides* although I am not convinced that this decision is entirely correct. The status of *P. millefolium* in particular needs to be established. There is a suggestion that differences in habit, stipule size and shape and perhaps flower colour may be meaningful. Regrettably the notes accompanying the majority of collections make no mention of the habit of the plant. The genus is in need of critical evaluation and detailed field studies coupled with a study of breeding systems are required to clarify whether any of the taxa placed in synonymy under *P. cassioides* should be accorded formal recognition at some rank. The genus commends itself to further study.

#### ACKNOWLEDGEMENTS

I am most grateful to Dr S. W. L. Jacobs, National Herbarium of New South Wales, for searching for types of *Petalostylis* species while serving as Australian Botanical Liaison Officer at the Herbarium, Royal Botanic Gardens, Kew, England, and to my colleague Mrs M. G. Corrick and to Mr and Mrs B. H. Smith, Wongan Hills, for searching for and collecting material of *Petalostylis* in Western Australia.

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Manuscript received 10 April 1985.

